HOLLAND & KNIGHT LLP

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April 26, 2004

GEORGE Y. WHEELER
202-457-7045
gwheeler@hklaw.com

VIA HAND DELIVERY

Jim Burtle
Chief, Experimental License Branch
Office of Engineering and Technology
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Dear Mr. Burtle:

This is in response to your email dated April 1, 2004 with regard to the complaint of Mr. E. Alan Crosswell dated March 31, 2004.

1. Ambient Corporation (Ambient) is conducting an ongoing test program for broadband over power line (BPL) technologies in Westchester County, New York under FCC experimental license, call sign WD2XEQ granted September 3, 2003.

2. Representatives of Ambient spoke with Mr. Crosswell on April 6 and April 14 to confirm that the company takes his interference concerns seriously and that it has been actively evaluating options to demonstrate and test techniques for operating in compliance with the non-interference requirements of the Part 15 rules. Part of these good faith efforts involves experimenting and testing the capability of notching out.

3. As mentioned in its experimental progress report filed March 4, 2004, the company is in the process of updating its test measurement program to reflect the FCC's proposals in its Notice of Proposed rulemaking ("NPRM") [FCC 04-29]

regarding carrier current systems, including BPL and amendment of Part 15 regarding new requirements and measurement guidelines for access broadband over power line systems in ET Docket No. 03-104/ET Docket No. 04-37, released February 23, 2004. Specifically its updates will be responsive to the FCC's proposals that Access BPL systems, including all BPL electronic devices, e.g., couplers, injectors, extractors, repeaters, boosters, concentrators installed on the electric utility overhead or underground medium voltage lines, etc., be measured in-situ to determine compliance with its Part 15 rules and that the measurement guidelines in Appendix C to its NPRM be used. The company is still studying these proposed guidelines and is considering how to introduce them into its test program at an early date.

4. In the interim, as part of its testing and experimental program, the company has and is conducting tests of notching out the 14 MHz amateur radio band (14.00 to 14.35 MHz). Initial results from field tests have shown feasibility of notching as a mitigation technique. However, full implementation of this feature will require upgrade of hardware some of which has been in the field for nearly two years. This upgrade will be completed in the near future.

5. The company intends to conduct test measurements as soon as feasible pursuant to the guidelines in Appendix C of the Commission's NPRM. When those results are available, the company will evaluate whether notching out is appropriate and/or whether it has other options to confirm its compliance with the Commission's rules and policies.

In the event there are any comments or questions concerning this matter, please contact the undersigned.

Very truly yours,

George Y. Wheeler

cc: E. Alan Crosswell

1854905_v1

Notes

6/3/2004
George Wheeler returned my call of yesterday. He said that Ambient is currently operating in Westchester County, New York only.

E. Alan Crosswell
Amateur Radio Station N2YGK
144 Washburn Road
Briarcliff Manor, NY 10510
212-854-3754
n2ygk@weca.org

June 11, 2004

Riley Hollingsworth
Federal Communications Commission
1270 Fairfield Road
Gettsyburg, PA 17325
Rholling@fcc.gov

Re: Unresolved harmful interference from experimental license WD2XEQ (File No. 0050-EX-ML-2003)

Dear Mr. Hollingsworth:

I am writing to appeal to you as Chief of the Enforcement Division to take action on my interference complaint originally filed on March 31, 2004. Although the Commission, Ambient Corporation (the experimental licensee) and Con Edison (the utility whose power lines are radiating harmful interference) were contacted in this complaint, only Ambient has contacted me, primarily through an intermediary P.E. they have contracted, Rich Mazzini.

I have made a good faith effort to work with Ambient Corporation primarily through telephone and email conversations with Mr. Mazzini, but also by participating in a conference call with Mr. Mazzini, Ram Rao and Yehuda Cern of Ambient. Ambient has been somewhat responsive and did claim to make some attempts at interference mitigation: They said the equipment they were using did not properly work to notch interference and were working with the vendor for a fix. Nonetheless, the interference remains, although, as you will see from my log, below, some changes happened which seemed to indicate that either Ambient had successfully notched out the intereference at 14 MHz or had turned off that segment of the BPL system for a number of weeks. However, today, I once again measured significant harmful interference. Furthermore, harmful interference was never mitigated along other branches of the BPL trial area.

Per the Special Temporary Authorization as well as Part 15, Ambient is required to immediately cease harmful interference to licensed services. This has not happened and the Commission has taken no action to date to rectify this violation of the Commission's rules.

I ask that you initiate an investigation of this harmful interference and do me the courtesy of acknowledging my complaint.

Sincerely,

E. Alan Crosswell

encl: Interference log for station N2YGK
Copy of March 31, 2004 letter

Station N2YGK interference log

3/27/04 10:00

[Taking Sarah home from basketball at Claremont via Pleastanville Rd.] Monitoring 14.212 heard interference while driving from Pleasantville Rd south of Old Briarcliff Rd, along Poplar and Dalmeny to Pine Rd. Interference was strongest about midway along Dalmeny. Sounded like an intermittent raspy square wave of about 1-2s duration preceded by 1 or 2 short bursts. Obviously not a lot of traffic currently being sent as there were fairly long silent periods of 5-10 seconds in between. If this had more than a single customer on it, the traffic would be more near continuous I imagine. The noise was an S9 at max using an FT-840 with a Hamstick 9120 vertical mounted to the rear bumper of my Chevy Suburban and it wiped out LY9Y calling CQ during CQ WPX contest. I normally get about an S4 noise level from the vehicle but was able to hear LY9Y calling quite clearly over it.

If I hadn't known there was a BPL trial along this route I would have had difficulty locating the interference as it is pretty much continuous along the entire route.

3/27/04 11:35

[Returning from dropping Sarah at Ossining Pizza via Pleasantville Rd.] Took photos at 178 Dalmeny. Interference as described previously was read S9+20 at 14.217. Driving around the area (Pleasantville Rd North to Chappaqua Rd) heard S9+20 on 14.233. Took a photo of the traffic cam that I think is also connected to the BPL system.

3/27/04 15:10

[Returning from trip to supermarket and Citibank on Pleasantville Rd.] While working DL0OV in CQ WPX contest was forced to ask him to repeat his exchange when a burst of BPL clobbered his transmission. His RST 59 in between the BPL noise. (Exchange was his 59 #832 my 59 #005) This was on Pleasantville Rd south just north of the intersection with Poplar.

3/28/04 07:29

[Driving to Briarcliff Bagels on North State Rd via Washburn to Carlton to Rt 9A North to North State.] BPL QRM on 14.294 from North State and Rt 9A and north on North State to Chappaqua Rd. Worked

NN4N and NM5O in CQ WPX.

3/28/04 07:39

[Returning from Briarcliff Bagels.] QRM on 14.213 on Chappaqua Road between North State and Carlton. Drops off at Carlton where I turned right. This stretch of Carlton has underground power lines. Worked K5TR in CQ WPX.

3/28/04 20:01

[Going to Chelsea's to pick up Rachel.] QRM on 14.162 starting at Carlton and 9A and continuing up 9A to left on North State and right on Pleasantville Rd north through Orchard Rd in Ossining. Heard most strongly along Pleasantville Rd between North State and Mulberry Rd, where it completely covered a QSO I was trying to monitor.

3/29/04 19:24 [Added to this log out of order since I found a note I had written and failed to transcribe here earlier. 4/26/04]

QRM on 14.197 from the interection of Pine and Dalmeny up the S-curves on Pine to the top of the hill.

3/30/04 17:00

Contacted Con Ed customer service to file an interference complaint. I gave the location of the interference as in the vicinity of Pleasantville Rd and Poplar Rd and up to Old Briarcliff Rd. The customer service agent said he would open a trouble ticket and took my name and daytime phone number. I asked for and was given a postal address to send a written complaint.

3/31/04

Sent interference complaint letters to Con Ed and FCC.

4/04/04

[Driving home from bank.] QRM heard on 14.263 at 13:45 starting at Radio Shack on Pleasantville Rd, across 9A onto Chappaqua Rd all the way along

Chappaqua Rd to Carlton.

4/06/04

Spoke by telephone to Rich Mazzini, a consultant P.E. hired by Ambient to represent them with respect to my interference complaint. [As these are notes based on a phone conversation there are undoubtedly ommissions and errors.] Rich says he doesn't really know the technical details but that Ambient is doing some research, looking at technical options, doing testing and that there are some mitigation measures. I asked whether this was an issue between me and Con Ed or Ambient as it is Con Ed's power lines that are radiating the interference and that I didn't want to waste anyone's time with having parallel discussions and he said he'd get back to me but that he believed Ambient was taking the lead on this issue. I mentioned that I'd opened a trouble ticket with Con Ed and they had not gotten back to me yet.

I reasserted my request to have the harmful interference cease as soon as possible and that I didn't want to drag this out for a long time. We also discussed whether I was sure this interference was from Ambient and the geopgraphic nature of it and I said I was pretty confident that it was, especially since it tracks the map on page 4 of Ambient's comments to the ET 03-104 NOI but was eager to do an "on-off" test on site to confirm it. I described my mobile station as pretty much run-of-the-mill with a $700 transceiver and a $20 antenna on the bumper and certainly not something overly sensitive. I felt it was important to convince myself that *my* station was interfered with (not just based on Ed Hare's more sophisticated setup).

I offered times on Thursday and Friday 4/8 and 4/9 to meet in person with an Ambient representative and demonstrate the interference and perform the test. Rich said he'd get back to me.

4/7/04 08:15

S9 QRM on 14.290 from 9A northbound and North State traffic light. Interfered with my reception of AR4KB.

4/7/04 19:38

Located another set of BPL taps off the medium voltage lines at 265 North State Rd at Stafford Street. Another tape on North State west of 425 near condos.

4/13/04 10:45

Called Rich Mazzini to see what's going on since he hadn't gotten back to me in a week. He said John Joyce (Ambient CEO) was supposed to call him back yesterday but didn't so he's going to call him now and follow up.

Rich called back. Yehuda Cern and Ram Rao will call me 4/14 at 3pm to discuss. He said they are writing a response to the FCC and they will be looking into notch filters.

4/14/04 15:30

Conference call with Ram Rao, Yehuda Cern, Rich Mazzini. Basically they were collecting information, asking me to describe the relative signal strength of the interference and where I heard it. They also asked a lot of questions that seemed to be along the lines of determining why I had filed a complaint and why now which I said was not particularly relevant as far as I was concerned. I was honest and said I'd heard about BPL coming to my town, had been shown the intereference by Ed Hare, was not particularly active on HF but was concerned that if this thing spreads to my street it will have a serious impact on my home station. I also pointed out that the streets they are deployed on are in fact ones that I drive regularly and that now that I've thrown my HF rig in the car, I hear the interference every day on the way to work. It seemed like they were making a case that I was out looking for the BPL QRM as oppossed to it finding me and that this somehow made a difference. [Being a cynic about the policies and motiviations of the current Commission and the administration that appointed them, I believe it probably does.]

I pointed out that with only 200,000 or so hams in the entire country and there only being a small number of BPL field trials spanning small areas that it stood to reason that the odds were quite unlikely of a member of a sparse ham population actually being located near a BPL trial and directly experiencing interference to their home station.

I also described how I didn't want to just take Ed's interference readings (using a horizontally polarized antenna) as gospel without seeing for myself with my own inferior mobile station with a vertical antenna. I also had to describe my home station (horizontal 5-band fan dipole at right angles to the power lines but with one end within 20 feet of them).

They also asked about power line noise (e.g. from bad insulators) since it is a problem for BPL too. They seemed to be implying that BPL deployment would be a good thing since it would make the power

companies clean up their insulator noise. This gave me a good chuckle. I also pointed out that we have people in the local club who are expert at finding interference (and have $10 AM radios) and having the power company resolve it and that one of our members was in fact an employee of Con Ed whose job it is to search out and resolve RF interference. Finally, they asked what amount of noise reduction would I consider reasonable. I said I didn't feel qualified to answer that question in quantitative terms. I also mentioned at some point that notching the ham bands would be enough for me to say my station isn't being interfered with, but what of WWV and shortwave broadcasters that I listen to?

Finally, I pressed them for either a date by which the continuing harmful interference would be eliminated or at least a date by which they would give me a date. They said I would have my answer by next week.

4/17/04 20:57 [Picking up Rachel at Kimberly's]

QRM on 14.19025 from Carlton to 9A North to Pleasantville Rd North to Poplar to Dalmeny to Cherry Hill Ct. Spun the dial while waiting for Rachel and the QRM is across the entire 20m band from 14.0 through 14.350. On return trip took Cherry Hill Ct to Dalmeny South to Pine up to the top of the S-curve.

4/23/04 15:12

After not receiving the call back that was promised on our 4/14/04 conference call, I sent email to Rich Mazzini pointing out the broken promise and threating to escalate my complaint to the FCC Enforcement branch unless Ambient ceases the interference by 4/30/04.

4/26/04 10:05

Left followup phone message for Rich Mazzini.

4/26/04 14:30

Rich returned my call. Apparently Ambient has sent a reply letter to the FCC which I have been CC'd on. Rich will forward an email copy of it tonight when he gets home. He says Yehuda Cern made some changes on Thursday (4/22) which may or may not have had the desired effect. We discussed that I had driven through the area since then and still heard interference but had not looked carefully to see if perhaps the

nes Burtle

m: Bruce Franca
t: Friday, September 10, 2004 8:54 AM
James Burtle
Steve Martin; Alan Scrime; Alan Stillwell; Anh Wride
ject: FW: Answer to Ambient re Briarcliff

n -
iarcliff is still an experimental, right? Could you please draft a letter to the
bient and other relevant folks here.
anks,
uce Franca
fice of Engineering & Technology
8-2470

Non-Public: For Official Use Only*****

----Original Message-----
om: Steve Martin
ent: Friday, September 10, 2004 8:48 AM
: Bruce Franca
ubject: RE: Answer to Ambient re Briarcliff

hanks!

teve Martin
echnical Research Branch
CC Laboratory
** Non-Public: For Internal Use Only ***

-----Original Message-----
rom: Bruce Franca
ent: Friday, September 10, 2004 8:47 AM
o: Steve Martin
c: Anh Wride; Alan Stillwell; Andrew Leimer; Rashmi Doshi; William Hurst
ubject: RE: Answer to Ambient re Briarcliff

Steve -

I think a quick e-mail is fine. I would suggest we say something along the lines of the following for the 3rd sentence: "Measured emissions from the device were found compliant with the current limits within the measurement error of our equipment." - if its measurement error we really don't know it was 3 dB above the limit. I would also add after your last sentence. "You should be receiving a formal letter requesting this information in the next few days."

Bruce Franca
Office of Engineering & Technology
418-2470

*****Non-Public: For Official Use Only********

-----Original Message-----
From: Steve Martin
Sent: Thursday, September 09, 2004 4:16 PM
To: Bruce Franca

Cc: Anh Wride; Alan Stillwell; Andrew Leimer; Rashmi Doshi; William Hurst
Subject: Answer to Ambient re Briarcliff

Bruce,
Ambient has been pressing me for a briefing on the Briarcliff Manor test results, and I've been putting them off by saying I need to present to headquarters 1st. I think that excuse has run out.

I would suggest that we either get the official letter out to them soon, or that I send an interim email saying something like the following. What do you think?

"We do not plan to provide a briefing at this time; however, our findings are as follows:
1. We tested one access BPL device located on Dalmeny Rd. Measured emissions in its intended band of operation were 3 dB above the emission limit; however, that difference is within our measurement error.

2. Performance of notching intended to protect the 20-meter amateur band was found to be inadequate to prevent harmful interference to the claimant.

Please let us know when you have completed implementation of the planned fix to the notch."

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

James Burtle

From: Bruce Franca
Sent: Friday, September 10, 2004 9:45 AM
To: James Burtle
Subject: FW: Briarcliff Manor test

FYI
Bruce Franca
Office of Engineering & Technology
418-2470

*****Non-Public: For Official Use Only********

-----Original Message-----
From: Steve Martin
Sent: Friday, September 10, 2004 9:31 AM
To: 'Yehuda Cern'
Subject: Briarcliff Manor test

Yehuda,
Please pass this on to Aaron Viner. I don't have his email address

We do not plan to provide a briefing on the Briarcliff Manor test results at this time; however, our findings are as follows:

1. We tested one access BPL device located on Dalmeny Rd. Measured emissions in its intended band of operation were found compliant with the current limits within the measurement error of our equipment.

2. Performance of notching intended to protect the 20-meter amateur band was found to be inadequate to prevent harmful interference to the claimant.

Please let us know when you have completed implementation of the planned fix to the notch.

You should be receiving a formal letter requesting this information in the next few days.

Sincerely

Steve Martin
Technical Research Branch
FCC Laboratory
7435 Oakland Mills Road
Laurel, MD, USA 21046
(301)362-3052

James Burtle

From: Steve Martin
Sent: Thursday, September 23, 2004 3:24 PM
To: Bruce Franca; Alan Stillwell; Alan Scrime; James Burtle
Cc: Rashmi Doshi; William Hurst; Andrew Leimer
Subject: FW: BPL in Briarcliff Manor

As you can see below, I just sent a brief reply in response to a new email from the Briarcliff Manor complainant. I'd like your opinion on item (1) below and want to alert you to item (2).

(1) Complainant "saw an improvement on 14 MHz" in one location, but still had high interference levels at another. I'm waiting for confirmation whether this other location also involved 14 MHz. If so, I'd like to forward this info to Ambient since it may indicate that they haven't fixed the notching on some of their units. Is there any problem with me contacting Ambient regarding this?

(2) The complainant also says "I also have not looked on other amatuer bands (yet). I do have mobile antennae for 80 and 10 m in addition to the 20 m hamstick I usually drive around with." Until now, he has complained only about the 20-meter (14 MHz) amateur band and a nearby shortwave broadcast. The Ambient system in Briarcliff Manor also operates in both the 10 and 80 meter bands. The only band Ambient is intentionally avoiding is the 20-meter band.

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----
From: Steve Martin
Sent: Thursday, September 23, 2004 2:54 PM
To: 'Alan Crosswell'
Subject: RE: BPL in Briarcliff Manor

Alan,
Thanks for the report. Was the interference on North State also at 14 MHz?

Steve Martin
Technical Research Branch
FCC Laboratory
7435 Oakland Mills Road
Laurel, MD, USA 21046

-----Original Message-----
From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Thursday, September 23, 2004 2:11 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

Last night I saw an improvement on 14 MHz on Dalmeny Road. I saw S9+10 QRM on North State road east of Rt 9A. I also have not looked on other amatuer bands (yet). I do have mobile antennae for 80 and 10 m in addition to the 20 m hamstick I usually drive around with. Please let me know when Ambient claims they've applied the change and I'll drive the route again.

Thanks.

/a

Steve Martin wrote:
> Alan,
> Our testing in Briarcliff Manor identified two specific problems with
> notching of the 20-meter amateur band as implemented in the BPL
> installation at the time of our test. One problem was addressed while
> we were there, and I understand that the other one has been addressed
> within the last few days, but has not yet been tested by the provider.
> Pending hearing the results of such tests from the provider, we are
> interested in knowing whether your observations indicate an
> improvement.
>
> Thanks
>
> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
>
>
> -----Original Message-----
> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Monday, September 20, 2004 7:04 AM
> To: Steve Martin
> Cc: Riley Hollingsworth
> Subject: Re: BPL in Briarcliff Manor
>
>
> Steve,
>
> I am still waiting to hear this information from FCC HQ staff. Please
> make sure I get a report back ASAP. There is still harmful
> interference caused by this system, including making it difficult to
> hear the Hurricane Watch Net on 14.325.
> If this BPL service extends to my street, I fear that I will not be
> able to
> participate in emergency communications with low power stations (e.g. on
>
> battery) which I otherwise might be able to today.
>
> Thanks.
> /a
>
>
> Steve Martin wrote:
>
>>Alan,
>>Thanks for the update. I also notice that you've updated your log
>>this week indicating S9+10 dB interference levels in the 20m band.
>>
>>Two of us visited Briarcliff Manor last week. The FCC staff members
>>in charge of BPL at FCC headquarters are out of the office this week,
>>but I will present our findings to them after their return, and you
>>can expect to hear from them subsequently.
>>
>>Thanks for keeping us informed.
>>
>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>*** Non-Public: For Internal Use Only ***
>>
>>
>>-----Original Message-----

>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Wednesday, August 25, 2004 10:01 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor
>>
>>
>>Steve,
>>
>>I'm back from vacation and the harmful interference is still there. /a
>>
>>Alan Crosswell wrote:
>>
>>
>>>OK, I've posted my latest log including QRM up to S9 covering WWV 15
>>>MHz experience this morning on the way to the train station. It
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>>>the noise is now worse along North State Rd and better but not
>>>eliminated at all along Poplar and Dalmeny. I'll also be emailing
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>>Rich
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>>>Mazzini who said he'd follow up on 7/16 and hasn't.
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>>>If you're planning to be in the area to observe, I'd be happy to meet
>>>with you and show you my mobile station. It's not all that
>>>impressive. I'll be back from vacation on 8/20.
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>>>Thanks.
>>>/a
>>
>>
>

James Burtle

From: Steve Martin
Sent: Monday, September 27, 2004 8:50 AM
To: Bruce Franca; Alan Stillwell; Alan Scrime; James Burtle
Cc: Anh Wride; Andrew Leimer
Subject: FW: BPL in Briarcliff Manor

FYI

-----Original Message-----
From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Friday, September 24, 2004 8:37 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

I will make some time to test it, but why is it necessary for Ambient to rely on me to check their system for problems? Don't they have competent RF engineers on staff?
/a

Steve Martin wrote:
> Alan,
> Ambient tells me that by the end of the workday today, they should
> have implemented a fix to a device on North State Rd that was not
> properly notched previously. They said that, if you still see
> interference after that time, they would appreciate any information
> you can provide as to where it is strongest.
>
> Thanks,
>
> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
> (301)362-3052
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> To: Steve Martin
> Subject: Re: BPL in Briarcliff Manor
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>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>7435 Oakland Mills Road
>>Laurel, MD, USA 21046
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>>-----Original Message-----
>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Monday, September 20, 2004 7:04 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor
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>>Steve,
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>>Thanks.
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>>>Two of us visited Briarcliff Manor last week. The FCC staff members
>>>in charge of BPL at FCC headquarters are out of the office this week,
>>>but I will present our findings to them after their return, and you
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>>>Thanks for keeping us informed.
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>>>Steve Martin
>>>Technical Research Branch
>>>FCC Laboratory
>>>*** Non-Public: For Internal Use Only ***
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>>>-----Original Message-----
>>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>>Sent: Wednesday, August 25, 2004 10:01 AM
>>>To: Steve Martin
>>>Cc: Riley Hollingsworth
>>>Subject: Re: BPL in Briarcliff Manor
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>>>Steve,
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>>>I'm back from vacation and the harmful interference is still there.
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>>>Alan Crosswell wrote:
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>>>>impressive. I'll be back from vacation on 8/20.
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>>>>Thanks.
>>>>/a
>>>
>>>
>

James Burtle

From: Dave Hallidy [k2dh@frontiernet.net]
Sent: Wednesday, October 06, 2004 11:00 PM
To: Anh Wride; Alan Stillwell; Riley Hollingsworth; James Burtle; Sheryl Wilkerson
Cc: Ed W1RFI Hare; Dave Hallidy
Subject: Effectiveness Of "Notching" BPL Signals In Amateur Radio/SWL Bands

Dear FCC Staff-
I have recently seen discussions related to the FCC's opinion that notching is an effective tool to mitigate BPL interference in the Amateur Radio HF bands. I've been closely involved with monitoring the system trial that was conducted (and recently terminated) in Penn Yan, NY. I'd like to share with you my experiences and observations that contradict this opinion.

DVI (the BPL provider in Penn Yan) and their equipment supplier, Amperion, used notching to attempt to reduce the level of BPL interference observed by me and others. In my initial complaint to the FCC in late March, 2004, I noted that strong BPL signals were observed continuously from below 18 MHz to above 30 MHz. DVI and Amperion reported that they had worked to improve the situation and on my second visit (in late May, 2004), I observed the following (I would also note here that the FCC never replied to any of my complaints in this matter)(the information below is excerpted and quoted from my second official complaint to the FCC):

"DVI (the provider) has made an attempt to reduce the interference to the Amateur spectrum in Penn Yan. They have been partially successful.
1) The 10m band (28.00-29.70 MHz) is clear of any BPL (it was completely covered with BPL during my first visit).
2) An attempt has been made to notch out BPL from the 15m band (21.00-21.45 MHz).
3) An attempt has been made to notch out BPL from the 12m band (24.890-24.990 MHz).
4) No attempt has been made to remove BPL from the 17m band. The 17m band (18.068-18.168 MHz) is completely covered up with strong BPL (as it was on my first visit).
5) The 15m band is only partially cleared of BPL. The lower 100kHz of the 15m band is completely covered up with strong BPL (the entire 15m band was covered up during my first visit), and residual carriers exist up to about 21.16 MHz.
6) The 12m band is only partially cleared of BPL. The lower 20kHz of the 12m band is completely covered up with strong BPL (the entire 12m band was covered during my first visit). In addition, the notch in the 12m band is rather ineffective- the residual signals never disappear."

As you can see, in their attempts to move and notch the BPL spectrum to mitigate interference, Amperion demonstrated only limited control of their hardware. I also have observed that energy from the Amperion BPL system is not well-contained within it's intended spectrum blocks. Residual signals spill over into neighboring spectrum. These signals ARE weaker than the main "intended" signal, but only attenuate gradually as one tunes away from the edge of the main signal.

In addition to interference in the Amateur bands, apparently no one at DVI or Amperion had given any thought to interference to the International Shortwave Broadcast Bands. The system in Penn Yan showed no attempt to notch or reduce interference there in any way, and moderately strong signals in the SWBC bands were obliterated by BPL.

My belief is that at some point in time, the technology employed by the manufacturers of BPL equipment will be both advanced enough and agile enough to effectively mitigate interference by the use of notching techniques. Today, at least in the experience I've had in Penn Yan, I must conclude that the equipment presently available does not have the capability to do this.

Sincerely,

David Hallidy K2DH
663 Beadle Road
Brockport, NY 14420
585-637-0696

k2dh@frontiernet.net

James Burtle

From: Alan Crosswell [alan@columbia.edu]
Sent: Thursday, October 07, 2004 10:02 AM
To: James Burtle
Subject: Re: Your BPL Complaint

Customer Communications
Con Edison
511 Theodore Fremd Ave
Rye, NY 10580

/a

James Burtle wrote:
> Thank you Mr. Crosswell. Could you please provide the address that
> Con Ed customer service gave you?
>
> Thanks,
>
> Jim Burtle
>
> *** Non-Public: For Internal Use Only ***
>
> -----Original Message-----
> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Wednesday, October 06, 2004 10:40 AM
> To: James Burtle
> Subject: Re: Your BPL Complaint
>
>
> Mr. Burtle:
>
> I first complained to the system operators (Con Edison and Ambient
> Corporation)
> as follows:
>
> March 30, 2004: Phone complaint to Con Ed customer service. They gave
> me the US mail address to send my complaint to.
>
> March 31, 2004: Written complaints to Con Ed and Ambient were mailed.
>
> April 6, 2004: First communication received in response to my
> complaint from a P.E. hired to represent Ambient Corporation.
>
> To date, Con Ed has never acknowledged nor responded to this
> complaint.
>
> I have worked with Ambient and with FCC staff on this issue since
> then. Your files should indicate the history of this, including my
> formal complaint sent to
> you on June 22, 2004 on the advice of Riley Hollingsworth to whom I
> originally
> sent my formal complaint on June 11, 2004. I also sent these same
> formal
> complaints via US mail.
>
> Alan Crosswell
>
>
>
>
> James Burtle wrote:
>

>>
>> Dear BPL complainant,
>>
>> The FCC has received your complaint of interference from a
>> Broadband-over-Power Lines (BPL) to amateur radio. The
>> Commission's policy is that parties who believe they are
>
> receiving
>
>> interference from a BPL system should first refer their
>
> complaint
>
>> to the system operator in order to give the operator an
>> opportunity to remedy the problem.
>>
>> You may have previously received an e-mail notice from me that
>
> the
>
>> Commission has received your complaint. If so, please note that
>
> I
>
>> am sending this message to several complainants because I
>
> recently
>
>> discovered that I have had a problem with my e-mail software.
>> Some of the messages that I sent were, in fact, not transmitted.
>
>
>> I apologize if this message is the second e-mail that you have
>> received acknowledging your complaint.
>>
>> Jim Burtle
>>
>>
>
>

James Burtle

From: Steve Martin
Sent: Thursday, October 07, 2004 10:55 AM
To: Bruce Franca; Alan Scrime; Alan Stillwell; James Burtle; Andrew Leimer
Cc: Rashmi Doshi; William Hurst
Subject: Briarcliff Manor BPL--New complaint

Below is a new email from our Briarcliff Manor complainant and my "Thanks for the update". Bottom line is that the 14 MHz band where he initially complained now looks good, but he is starting to look at other amateur bands and finding interference. His latest log entry on his website is as follows:

"10/06/04 19:30
14.208 heard not discernible interference (remember my ignition noise is about S5) on Dalmeny to Poplar, Pleasantville Road north to Chappaqua Road, across 9A to Fuller, down Fuller, left on Whitson, right on Burns back to Chappaqua. At Chappaqua and North State traffic light I switched bands to 15 meters and S7 QRM appears at 21.340 on an antenna that is nowhere near resonant for this band and proceeds from the intersection clear across Route 100 and even a little way up Carleton where the power lines are underground. So they cleaned up 20 meters by moving the harmful interference to 15 meters. Or maybe it was always there as I was concentrating on 20 meters. Nice try. No cigar."

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----
From: Steve Martin
Sent: Thursday, October 07, 2004 10:52 AM
To: 'Alan Crosswell'
Subject: RE: BPL in Briarcliff Manor

Alan,
Thanks for the update

Steve Martin

-----Original Message-----
From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Wednesday, October 06, 2004 9:52 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

I've updated my weblog at http://www.columbia.edu/~alan/bpl. Looks like they've notched the interference on 14 MHz (as well as I can tell with an S5 ignition noise level from my car) but it appears that the interference is there on 21 MHz. This is the first time I've checked on a band other than 14 MHz. I guess I'll be unscrewing the 20 meter antenna and screwing in some of the others in my collection to see where there's still unremediated harmful interference....

/a

Steve Martin wrote:
> Alan,
> Ambient tells me that by the end of the workday today, they should

> have implemented a fix to a device on North State Rd that was not
> properly notched previously. They said that, if you still see
> interference after that time, they would appreciate any information
> you can provide as to where it is strongest.
>
> Thanks,
>
> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
> (301)362-3052
>
>
> -----Original Message-----
> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Thursday, September 23, 2004 2:11 PM
> To: Steve Martin
> Subject: Re: BPL in Briarcliff Manor
>
>
> Steve,
>
> Last night I saw an improvement on 14 MHz on Dalmeny Road. I saw
> S9+10 QRM on North State road east of Rt 9A. I also have not looked
> on other amatuer bands
> (yet). I do have mobile antennae for 80 and 10 m in addition to the
> 20 m hamstick I usually drive around with. Please let me know when
> Ambient claims
> they've applied the change and I'll drive the route again.
>
> Thanks.
> /a
>
>
> Steve Martin wrote:
>
>>Alan,
>>Our testing in Briarcliff Manor identified two specific problems with
>>notching of the 20-meter amateur band as implemented in the BPL
>>installation at the time of our test. One problem was addressed while
>>we were there, and I understand that the other one has been addressed
>>within the last few days, but has not yet been tested by the provider.
>>Pending hearing the results of such tests from the provider, we are
>>interested in knowing whether your observations indicate an
>
> improvement.
>
>>Thanks
>>
>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>7435 Oakland Mills Road
>>Laurel, MD, USA 21046
>>
>>
>>-----Original Message-----
>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Monday, September 20, 2004 7:04 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor
>>
>>
>>Steve,